ICHTHYOLOGY.—*Notes on the blennioid fish genera* Runula (*subfamily Petroscirtinae*) *and* Tripterygion *and* Helcogramma (*family Clinidae*), *of the American tropical Pacific.*[1]

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During my recent studies of the blennies of the Marshall Islands, it was necessary to examine some of the American species in the subfamilies Petroscirtinae and Clinidae. The following notes should help clarify the species and nomenclatorial status of several genera and species of American blennies.

PETROSCIRTINAE

The family Atopoclinidae is listed in Jordan, Evermann, and Clark's *Check list of the fishes and fishlike vertebrates of North and Middle America. . .* (Rep. U. S. Comm. Fish 1928, pt. 2: 465. 1930). Norman (Ann. Mag. Nat. Hist. (2) **10**: 793. 1933) referred the genus *Atopoclinus* Vaillant with uncertainty to the blennioid genus *Aspidontus* Quoy and Gaimard. My study of the genotypes of *Aspidontus* and of *Runula* revealed that there were two groups of species representing two different phylogenetic lines and that all the American Pacific species belonged to the *Runula* group including *Atopoclinus*. After carefully studying all the material in the U. S. National Museum referable to the two genera mentioned, it was concluded that *Runula* was distinct and should be removed from the synonymy of *Aspidontus* as defined by Norman, 1943, on the basis of the following characters:

1*a*. Pectoral rays usually 14; incisorlike teeth of lower jaw approximately equal in number and in size to those of upper jaw. *Aspidontus*

1*b*. Pectoral rays usually 12; incisorlike teeth of lower jaw notably twice or nearly twice as numerous and about half as wide as those in upper jaw. . . . . *Runula*

Genus **Runula** Jordan and Bollman

Runula Jordan and Bollman, Proc. U. S. Nat. Mus. **12**: 171. 1890 (genotype, *Runula azalea* Jordan and Bollman).

Atopoclinus Vaillant, Bull. Soc. Philomat. Paris (3) **6**: 73. 1890 (genotype, *Atopoclinus ringens* Vaillant).

So far in the tropical American Pacific but two species of *Runula* have been found. They may be distinguished by the following key, aided by table 1:

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TABLE 1.—COUNTS MADE ON CERTAIN SPECIES OF RUNULA

Species	Number of fin rays														
	Dorsal								Anal					Pectoral	
	VII	VIII	IX	31	32	33	34	35	II	27	28	29	30	12	13
ringens	1	4	1	1	1	1	1	2	5	2	2	1	—	3	1
azalea	1	5	—	1	—	1	3	1	5	—	1	3	1	8	—

Species	Number of incisorlike teeth													
	Lower jaw								Upper jaw					
	41 42	43 44	45 45	47 48	49 50	51 52	53 54	55 56	21 22	23 24	25 26	27 28	29 30	31 32
ringens	—	—	—	—	—	—	2	1	—	—	1	—	—	2
azalea	1	2	1	—	1	—	—	—	1	2	—	—	—	—

1*a*. Sides with a dark brown band, usually broken into more or less distinct small blotches posteriorly, then continuing on caudal fin, tapering to a point at rear end of middle rays of caudal fin; dorsal fin with a median black band, white-edged distally, and basally pale. . . . . *R. ringens* (Vaillant)

1*b*. Dark lateral band if present usually indistinct, not continuing to rear of caudal fin but ending in a small dark spot basally; sides and especially dorsal fin, with 6 dark bars; anal with 4 dark bars; no dark band in dorsal fin. *R. azalea* Jordan and Bollman

The nomenclature for the two species follows:

Runula ringens (Vaillant)

Atopoclinus ringens Vaillant, Bull. Soc. Philom. Paris (3) **6**: 74. 1890 (type locality, Gulf of California).

Runula albolinea Nichols, Zoologica **5** (4): 64, fig. 11. 1924 (type locality, Galápagos Islands).

Petroscirtes panamensis Fowler, Acad. Nat. Sci. Philadelphia Monogr. **6**: 291, fig. 246. 1944 (Pearl Islands).

Runula azalea Jordan and Bollman

Runula azalea Jordan and Bollman, Proc. U. S. Nat. Mus. **12**: 171. 1890 (type locality, Galápagos Islands).

Petroscirtes belanskei Borodin, Bull. Vanderbilt Oceanogr. Mus. **1** (1): 33, pl. 3, fig. 3. 1928 (type locality, Costa Rica).

I have compared the figure of *P. bclanskei* with the holotype of *R. azalea*, U.S.N.M. no. 44299,

and have no doubt that it is the same species as *azalea*.

Clinidae

My study of the numerous species of the world centering around the genera *Tripterygion*, *Enneapterygius*, and *Enneanectes* of authors indicated much confusion in regard to both genera and species. I did not find a review of the genera or of some 49 species already named for this group of fishes. Therefore, in order to come to some conclusion as to what genus to refer certain species that I was studying in the Marshall Island material, it was necessary to survey all the genotypes so far proposed. The following key though tentative is intended to help define the genera as observed by me in the literature:

1*a*. First dorsal with III to VII spines, notably separated from second spiny dorsal fin, or membrane incised to base forming 2 distinct spiny dorsal fins.

2*a*. First dorsal fin with V to VII spines, second dorsal with about XIX to XXII spines; anal with about II, 25 to 27; pectoral rays about 17 to 19; vertical scale rows about 60 to 65; lateral line, anteriorly, separated from base of second spiny dorsal by 5 or 6 scales; breast scaly; head naked.

Forsterygion Whitley and Phillipps[2]

2*b*. First dorsal fin with III or IV spines; second with X to XVII; dorsal soft rays 6 to 15; anal I or II, 13 to 26; scales in about 20 to 45 vertical rows.

3*a*. Lateral line represented by pores anteriorly, and convexly curved above pectoral fin, separated by 2 to 5 scales from base of spiny dorsal fins, and ending from opposite base of second dorsal to that of front of base of soft dorsal, thence commencing 1 or 2 scales below and continuing as notched scales along midlengthwise axis of body.

4*a*. Pectoral rays 14 to 16; 2 or 3 scales between anterior lateral line and base of second dorsal; first dorsal usually with III spines, rarely IV.

Tripterygion Risso

4*b*. Pectoral rays usually 11; 4 or 5 scales between anterior lateral line and base of second dorsal; dorsal rays IV-X-12 or 13; anal I, 22 or 23; lateral-line pores 15 + 25.....*Notoclinus* Gill[3]

3*b*. Lateral line concavely curved downward behind pectoral fin, separated by 4 to 8 scales from base of second spiny dorsal fin, thence continuing along midlengthwise axis of body, the last scales sometimes notched posteriorly.

Heleogramma McCulloch and Waite

1*b*. First dorsal of III or IV spines, separated from following spines by a notably wider than usual space, but membrane continuous, forming a single spiny dorsal fin; no cirri on eye or on nape; dorsal rays about III, XIV-12; anal II, 17; head naked, about 7 scales in a row from lateral line and middle of base of spiny dorsal; lateral line curving downward behind pectoral fin, thence extending along midlengthwise axis of body.

Lepidoblennius Steindachner[4]

As a result of the generic analyses of various species of the fishes in this relationship, it was observed that the American species were little understood and were greatly confused. In order to clarify the status of the genus *Enneanectes*, all the American species were compared. I am grateful to J. Bökle, for data supplied on specimens in the Stanford Museum collections, especially for the holotype of *E. storeyae* Brock. The following analysis of America genera and species, it is hoped, will aid those who may wish to identify species in the genera *Tripterygion* and *Helcogramma:*

1*a*. Lateral line represented by pores anteriorly and convexly curved above pectoral fin, separated by 2 to 4 scales from base of second spiny dorsal fin, and ending from opposite base of second dorsal to front of base of soft or third dorsal, thence commencing 1 or 2 scales below and continuing as posteriorly notched scales, along midlengthwise axis of body (*Tripterygion*).

2*a*. Dorsal rays about III–XIII to XV-13 or 14; anal II, 21; pectoral 17 or 18; pores in lateral line 27 + 12; about 3 or 4 scales above lateral line to base of second dorsal and at beginning of posterior lateral line about 3 scales to base of anal fin; head with scales, breast partly scaled; about 14 scales in a zigzag row around caudal peduncle.

Tripterygion corallicola (Kendall and Radcliffe)

2*b*. Dorsal rays about III–X to XIII-6 to 8; pectoral usually 15; about 2 scales above

[2] *Forsterygion* Whitley and Phillipps, Trans. Roy. Soc. New Zealand **69** (2): 236. 1939 (genotype, *Blennius varius* Bloch and Schneider = *Tripterygion nigripenne* Cuvier and Valenciennes), probably = *Tripterygion capito* Jenyns, Zoology voyage *Beagle*, pt. 4, Fish: 94–95, pl. 19, fig. 1. 1842 (Bay of Islands, New Zealand).

[3] *Notoclinus* Gill, Mem. Nat. Acad. Sci. **6**: 95, 124. 1893 (genotype, *Tripterygion fenestratum* = *Blennius fenestratus* Bloch and Schneider). Gill based the genus *Notoclinus* on a large specimen of *fenestratum* from New Zealand (U.S.N.M. No. 39672); it measures 189 mm. in standard length.

[4] *Lepidoblennius* Steindachner, Sitzb. Akad. Wiss. Wien **55**: 3. 1867 (genotype, *Lepidoblennius haplodactylus* Steindachner).

dorsal lateral line and base of second dorsal and 2 or 3 scales between posterior lateral line and anal-fin base; zigzag scales around caudal peduncle 8 or 9.

3*a*. Area in front of anal fin usually completely or partly scaled; normally a few scales on head of adults; dorsay rays III–XI or XII-6 or 7; anal usually I, 16; pores in lateral lines about 13 + 17 to 19.

Tripterygion jordani (Evermann and Marsh)

3*b*. Area in front of anal fin naked; head naked; dorsal rays usually about III-X-8, anal probably about I, 16; pores in lateral line 10 + 21.

Tripterygion sexmaculatus Fowler

1*b*. Lateral line concavely curved downward behind pectoral fin and continuing along midlengthwise axis of body, separated by 4 to 8 scales from base of second spiny dorsal fin, and 4 to 8 scales from anal origin (*Helcogramma*); dorsal rays III–XI or XII-9 or 10; anal II, 16 or 17; pectoral 15 or 16; about 30 to 34 pores in lateral line, 4 or 5 scales between lateral line and base of second dorsal, and about 4 scales between lateral line and anal fin base; head and breast naked; 12 to 15 scales in a zigzag row around caudal peduncle.

Helcogramma carminale (Jordan and Gilbert)

The synonymy of various genera and species follows:

Genus **Tripterygion** Risso

Tripterygion Risso, Hist. Nat. Eur. Merid. **3**: 241. 1826 (genotype, *Tripterygion nasus* Risso); sometimes amended to *Tripterygium* of authors.

Enneapterygius Rüppell, Neue Wirbeth. Abyssinia, Fische: 2. 1835 (genotype, *Enneapterygius pusillus* Rüppell).

Enncanectes Jordan and Evermann, *in* Jordan, Proc. California Acad. Sci. (2) **5**: 501, pl. 53. 1895 (genotype, based on pl. 53, "*Enneanectes carminalis*" not of Jordan and Gilbert = *Gillias sexmaculatus* Fowler, 1941). *Tripterygium carminale* Jordan and Gilbert, holotype U.S.N.M. no. 120946, was found by me with the types of *Gobiesox zebra* in 1944 and belongs to another genus (see *Helcogramma*) as indicated in this study.

Gillias Evermann and Marsh, Rep. U. S. Fish Comm. **25** (1899): 357. 1900 (genotype, *Gillias jordani* Evermann and Marsh).

Trianectes McCulloch and Waite, Rec. South Austr. Mus. **1** (1): 53. 1918 (genotype, *Trianectes bucephalus* McCulloch and Waite).

Notoclinops Whitley, Mem. Queensland Mus. **10**: (1) 20. 1930 (genotype, *Triptcrygion segmentatum* McCulloch and Phillips).

Vcrconectes Whitley, Austr. Zool. **6** (1): 324. 1931 (genotype *Tripterygion bucephalus* McCulloch and Waite; proposed to replace *Trianectes*, said erroneously by Whitley to be preoccupied).

Vauclusella Whitley, Austr. Zool. **6** (4): 324. 1931 (genotype, *Tripterygion annulatum* Ramsey and Ogilby).

Tripterygion corallicola (Kendall and Radcliffe)

Enneapterygius corallicola Kendall and Radcliffe, Mem. Mus. Comp. Zool. **35** (3): 153, pl. 7, fig. 1. 1912 (type locality, Chatham Island, Galápagos; holotype, U.S.N.M. no. 65484).

Tripterygion jordani (Evermann and Marsh)

Gillias jordani Evermann and Marsh, Rep. U. S. Fish Comm. **25** (1899): 357. 1900 (type locality, Puerto Rico; holotype, U.S.N.M. no. 49368; paratypes, U.S.N.M. no. 126096).

Enneapterygius pectoralis Fowler, Proc. Acad. Nat. Sci. Philadelphia. **93**: 96, figs. 10–12. 1941 (type locality, Sanibel Island, Fla.).

Tripterygion sexmaculatus (Fowler)

Enneanectes carminalis (not Jordan and Gilbert) Jordan, Proc. California Acad. Sci. (2) **5**: 501, pl. 53. 1895 (Mazatlán) Stanford Univ. no. 3854. Brock, *l,c.*).

Gillias sexmaculatus Fowler, Acad. Nat. Sci. Philadelphia Monogr. 6: 286, fig. 241. 1941 (type locality, Pearl Islands, Panama).

Genus **Helcogramma** McCulloch and Waite

Helcogramma McCulloch and Waite, Rec. South Austr. Mus. **1**: 51. 1918 (genotype, *Helcogramma decurrens* McCulloch and Waite).

Axoclinus Fowler, Acad. Nat. Sci. Philadelphia Monogr. 6: 288. 1941 (genotype, *Axoclinus lucillae* Fowler = *Tripterygium carminale* Jordan and Gilbert, holotype U.S.N.M. no. 120946, found by Schultz with the types of *Gobiesox zebra* and not lost as published by Fowler (ibid.) and by Brock (Stanford Univ. Bull. **2** (1). 1940); Fowler's misspelling on p. 388, fig. 242, *Axochnus*, a typographical error.

Helcogramma carminale (Jordan and Gilbert)

Tripterygium carminale Jordan and Gilbert, Proc. U. S. Nat. Mus. **4**: 362. 1882 (type locality, Mazatlán; holotype, U.S.N.M. no. 120946).

Enncapterygius storeyae Brock, Stanford Ichth. Bull. **2** (1): 33. 1940 (type locality, Cape San Lucas; holotype, S.U. no. 35045).

Axoclinus lucillae Fowler, Acad. Nat. Sci. Philadelphia Monogr. 6: 289, fig. 242. 1941 (type locality, Pearl Islands, Panama).

The "neotype" Stanford University no. 3854 by Brock, 1940, does not belong to this genus and species but is a specimen of *Tripterygion sexmaculatus* (Fowler).